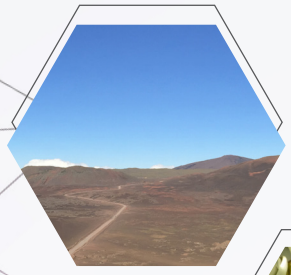
BOOK OF ABSTRACTS
POSTERS

Island BIOLOGY



La Réunion
8-13 JULY

2019

Université de la Réunion
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Diversity of aphyllous Vanilla species in the south-west Indian Ocean region: a challenge for orchid taxonomy, evolution and conservation research

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The pantropical genus *Vanilla* is a member of the Orchidaceae family, one of the largest and most ancient families of angiosperms in the world. It originated in America and differentiated in America, Africa and Asia. About 126 species of *Vanilla* have been catalogued since the discovery of the genus*:* 25 can be found in Africa, 31 are indigenous to Asia, New Guinea and Pacific islands, and 70 are distributed in tropical America. The south-west Indian Ocean (SWIO) region, a biodiversity hotspot for orchids, is home to 9 native species of the genus with 7 aphyllous species and 2 leafy species. These 7 aphyllous are represented by two species with yellow flowers (*V. humblotii*, *V. perrieri*) and five species with white flowers (*V. madagascariensis, V. bosseri, V. decaryana, V. phalaenopsis, V. roscheri*). Recent molecular phylogenetic studies showed that these aphyllous species form a recent monophyletic group. Morphological descriptions of these aphyllous species in databases (MNHN, RBG Kew, Tropicos..) and in scientific publications are based on a limited number of individuals. The morphological traits (petals, sepals, label, and stems) are very similar between species and do not provide reliable identification despite possible flower size differences. Moreover, the species have more or less the same flowering period (October-December) and their geographical distribution areas overlap in Madagascar, increasing the probability of finding some sympatric species such as *V. madagascariensis, V. bosseri and V. perrieri*, and therefore possible hybrids. As the available information on genetic structuring and phylogeny of these species is insufficient, the resolution of their taxonomy is problematic. Aphyllous *Vanilla* species from the SWIO islands are thus an excellent model for understanding the evolution of orchids. For their conservation and to confirm the identity of these aphyllous species, an integrated approach with classical taxonomy using a large number of samples, intense fieldwork on biology and ecology, and molecular studies using variable markers is currently underway.

Keywords: Vanilla, Orchidaceae, morphological diversity, taxonomy, south west Indian Ocean region

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